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April 2001

U.S. Department of Energy
Idaho Operations Office

Remedial Design/Remedial Action Work Plan Idaho National Engineering and Environmental Laboratory Central Facilities Area, Operable Unit 4-13 Transformer Yard (CFA-10)

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ABSTRACT

This comprehensive remedial design/remedial action work plan for the Waste Area Group 4, Operable Unit 4-13 task site was developed to implement the selected alternatives as stated in the Final Record of Decision for the Central Facilities Area, Operable Unit 4-13. During the comprehensive remedial investigation/feasibility study, the Transformer Yard (CFA-10) was shown to have lead contamination levels above the Environmental Protection Agency screening level of 400 mg/kg, although risks and hazard quotients could not be estimated because human health toxicity data are not available for lead. This work plan describes the remedial design/remedial action for the excavation of contaminated soil at the Transformer Yard (CFA-10).

CONTENTS

FIGURES

TABLES

ACRONYMS

AOC	area of contamination
ARAR	applicable or relevant and appropriate requirement
BBWI	Bechtel BWXT Idaho LLC
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy-Idaho Operations Office
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
FRG	final remediation goal
HASP	health and safety plan
HSO	health and safety officer
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDHW/DEQ	Idaho Department of Health and Welfare/Division of Environmental Quality
IH	industrial hygienist/industrial hygiene
INEEL	Idaho National Engineering and Environmental Laboratory
LDR	land disposal restriction
M&O	maintenance and operations
MCP	management control procedure
OSHA	Occupational Safety and Health Administration
OU	operable unit

PPE	personal protective equipment
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design and remedial action
RAOs	remedial action objectives
ROD	Record of Decision
RRWAC	INEEL Reusable Property, Recyclable Materials, and Waste Acceptance Criteria
SHPO/THPO	State Historical Preservation Officer/Tribal Historical Preservation Officer
SOW	Statement of Work
TCLP	toxicity characteristic leaching procedure
TSDF	Treatment, Storage, and Disposal Facility
USC	United States Code
WAG	waste area group
WGS	Waste Generator Services
WMP	waste management plan
WSA	Waste Storage Area

Remedial Design/Remedial Action Work Plan Idaho National Engineering and Environmental Laboratory Central Facilities Area, Operable Unit 4-13 Transformer Yard (CFA-10)

1. INTRODUCTION

In accordance with the *Federal Facility Agreement and Consent Order* (FFA/CO) (DOE-ID 1991) between the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Idaho Department of Health and Welfare/Division of Environmental Quality (IDHW/DEQ), hereafter referred to as the Agencies, DOE submits the following remedial design/remedial action (RD/RA) work plan for the Central Facilities Area (CFA) Transformer Yard (CFA-10). Under the current remediation management strategy outlined in the FFA/CO, the location identified for the remedial action is designated as Waste Area Group (WAG) 4, Operable Unit (OU) 4-13 at the Idaho National Engineering and Environmental Laboratory (INEEL).

The OU 4-13 remedial action, as part of the *National Oil and Hazardous Substances Pollution Contingency Plan* and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 United Stated Code [USC] § 6901 et seq.), as amended by the Superfund Amendments and Reauthorization Act of 1986, will proceed in accordance with the Record of Decision (ROD) for the CFA (DOE-ID 2000a).

On July 1, 2000, the IDHW/DEQ was reorganized resulting in the creation of the Idaho Department of Environmental Quality (IDEQ). The IDEQ has become the state regulatory agency for this RD/RA Work Plan and any reference to the IDHW/DEQ is for historical purposes only.

1.1 Work Plan Organization

This work plan is designed as a handbook for implementing RD/RA activities at CFA-10, the Transformer Yard located at WAG 4, OU 4-13. The work plan describes the Transformer Yard, contaminants, project management, tasks, schedules, and cost estimates. The following are brief descriptions of the work plan sections and appendices:

- Section 1, Introduction, describes the background and history of the Transformer Yard and gives an overview of the selected remedy.
- Section 2, Design Basis, provides the design criteria including the design codes and standards, assumptions, and quality assurance.
- Section 3, Remedial Design, discusses the remedial design of the project including a summary of the required earthwork, controls for surface water and erosion, and subcontractor staging.
- Section 4, Human Health and Environmental Compliance, presents a summary of the remedial action objectives (RAOs) and the methods by which they will be met and a summary of how the substantive requirements of the applicable or relevant and appropriate requirements (ARARs) are addressed by the remedial design and during remedial action.

- Section 5, Remedial Action Work Plan, outlines the remedial action work plan including the necessary steps and documentation required to complete the remedial action described in Sections 1 through 4, remedial action work tasks, project cost estimates, and inspections.

- Section 6, References, provides a list of reference material.

- Appendix A, Design Drawings, contains drawings that detail the present conditions (topography, fencing, etc.) of the Transformer Yard as well as the work to be performed during the remedial action.

- Appendix B, Technical Specifications, contains the specifications that provide the general terms and conditions for the subcontractor to complete the remediation.

- Appendix C, Quality Level Evaluation, assigns a quality level to the remedial action.

- Appendix D, Waste Management Plan, identifies and describes the management of wastes generated during the remedial action activities.

1.2 Background

The government-owned/contractor-operated INEEL, managed by the U.S. Department of Energy Idaho Operations Office (DOE-ID), is located 51 km (32 mi) west of Idaho Falls, Idaho, and occupies 2,305 km^2 (890 mi^2) of the northeastern portion of the Eastern Snake River Plain. The facility lies in portions of five Idaho Counties: Butte, Jefferson, Bonneville, Clark, and Bingham.

The CFA is located in the south-central portion of the INEEL and has been used since 1949 to house many of the support services for all of the operations at the INEEL, including administrative offices, research laboratories, a cafeteria, emergency and medical services, construction and support services, workshops, warehouses, vehicle and equipment pools, bus system, and laundry facilities (Figure 1-1 and Appendix A, Figure C-1). The types of CERCLA remedial sites at CFA include landfills, underground storage tanks, aboveground storage tanks, drywells, disposal ponds, soil contamination areas, and a sewage plant.

The areas designated as OU 4-13 are contaminated with metals, radionuclides, or both (DOE-ID 2000a). These three areas are (1) the Transformer Yard (CFA-10), formerly known as the Transformer Yard Oil Spills Site; (2) the Sewage Plant Drainfield (CFA-08); and (3) the pond (CFA-04).

This RD/RA Work Plan addresses only the Transformer Yard (CFA-10); the remaining two OU 4-13 areas identified in the ROD as requiring remedial action will be addressed in future RD/RA work plans.

The Transformer Yard is oriented northeast-southwest and occupies approximately 808 m^2 (8,694 ft^2). The Transformer Yard has the dimensions of 43 meters (141 feet) along its southeast border, 19.2 meters (63 feet) along the southwest, 38.4 meters (126 feet) along the northwest, and 20.4 meters (67 feet) along the northeast. The remedial site surface is comprised of soil with a concrete pad (6.1 meters [20 feet] wide by 20 meters [66 feet] long) oriented northwest-southeast located at the center of the Transformer Yard. The pad has a grated rectangular drainage structure oriented northeast-southwest in the center of the pad. The pad drainage discharges to the soil surface at the northeastern and southwestern ends of the grated drainage structure.

The fenced Transformer Yard is adjacent to a metalworking shop (Figure 1-2). Although scrap metal and/or waste from the metalworking shop were not known to have been routinely dumped into the yard, the yard is contaminated with metals. Lead is the only contaminant of concern at the Transformer Yard that poses an unacceptable risk to human health. No specific pattern of welding activities or waste disposal of lead could be identified. Based on the collocation of lead and copper in the sampling results, copper, which is present in quantities only slightly above background levels, is expected to be remediated with lead (Table 1-1). In addition, lead and copper were identified as contaminants of concern for ecological risk. The final remediation goal of 400 mg/kg for lead is at EPA's residential screening level and does not address ecological risk levels.

Additional x-ray fluorescence (XRF) survey data of surface soil in the Transformer Yard (see Appendix E), which was obtained post-ROD, indicates the highest levels of lead contamination (>400 mg/kg) are located along the southwest-southeast side of the building. Some lead contamination was also found in the soil along either side of the concrete pad.

1.3 Selected Remedy

Based on consideration of the requirements of CERCLA, the detailed analysis of alternatives, and public comments, the Agencies have selected a remedy for the Transformer Yard (CFA-10). The selected alternative consists of characterizing and excavating soil exceeding the final remediation goal (FRG); performing verification sampling to ensure that there is no identified contamination remaining at the remedial site exceeding the FRG; both stabilizing soil that exhibits the Resource Conservation and Recovery Act (RCRA) toxicity characteristics for lead and disposing treated soils to a permitted off-INEEL facility; and backfilling the excavation with uncontaminated soil to match the original grade. Performance standards were implemented as design criteria for the remedial site to ensure that the selected remedy is protective of human health and the environment. The Transformer Yard will not require a five-year review since contaminated soil above the FRG will be excavated and transported for stabilization and disposal at a permitted off-INEEL Treatment, Storage, and Disposal Facility (TSDF).

Table 1-1. Contaminants of Concern and Final Remediation Goals for the Transformer Yard (CFA-10).

Remedial Site	Contaminant of Concern	Final Remediation Goals (mg/kg)
Transformer Yard (CFA-10)	Lead	400

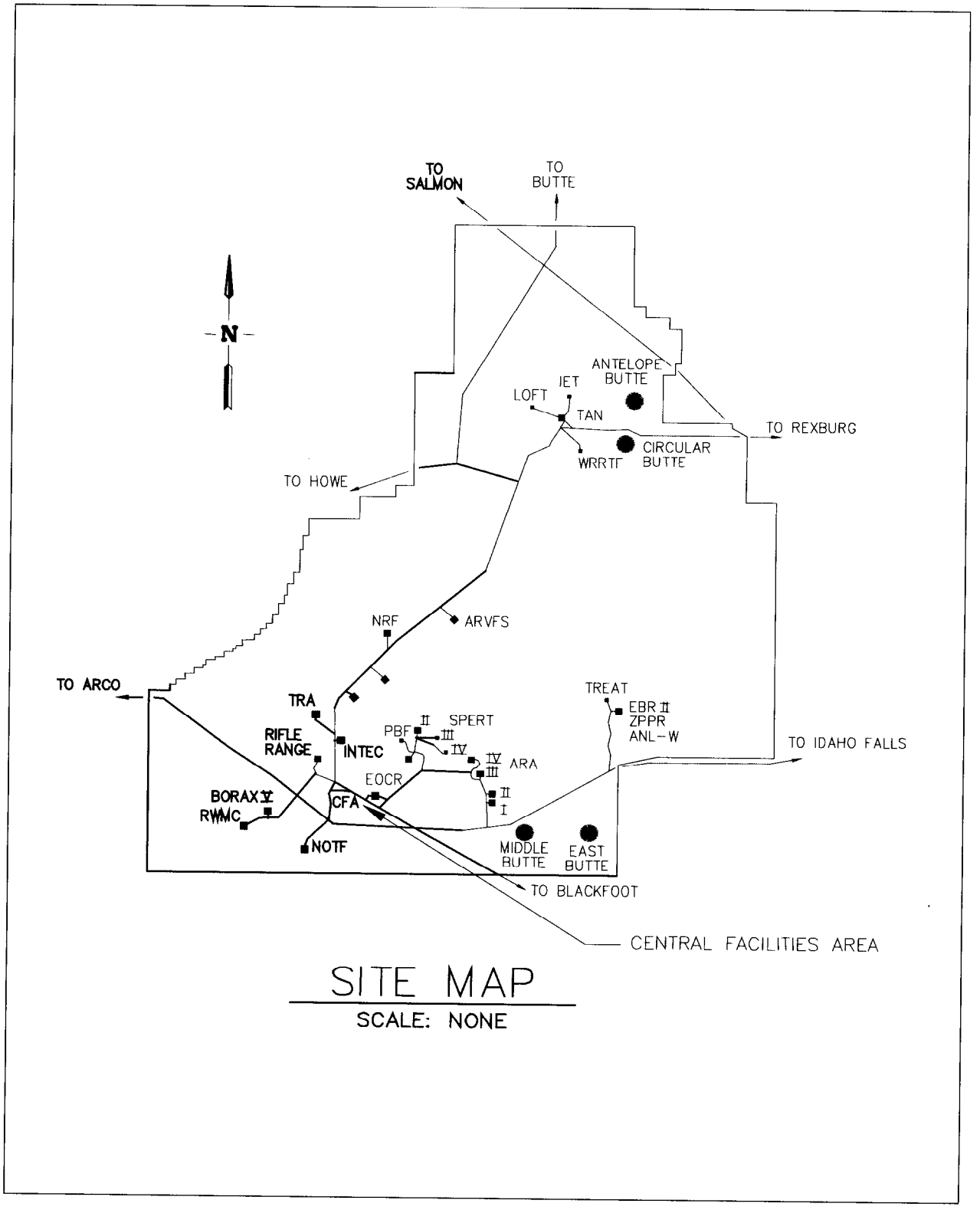

Figure 1-1. Location of the CFA (OU 4-13) at the INEEL.

CFA AREA MAP

(NOT TO SCALE)

CFA-10

Figure 1-2. Location of Transformer Yard (CFA-10) at the CFA.

2. DESIGN BASIS

This section describes the design basis for the Transformer Yard identified as CFA-10 in Operable Unit 4-13. The seven subsections address the project's components, design criteria, basis for excavation and containment, and the related standards and guidelines under which the project will be enacted.

2.1 General Description of Project Components

2.1.1 Support Facilities

The location of the support facilities is shown in Appendix A, Drawing C-3. Support facilities required during the excavation of contaminated soil will include (1) a holding area for excavated soil and required containers for the soil transport and (2) a decontamination area.

2.1.2 Electrical Power

Electrical power should be available at the remedial site from Building CFA-667, which adjoins the Transformer Yard.

2.1.3 Remedial Action Services

Remedial action services will be provided, as needed, and will include engineering support during the remedial action. The remedial action service contractor will provide representative(s), as required, to assist in resolution of technical issues, verify remedial action work and compliance to specifications, and evaluate any modifications to the remedial action design. The contractor may also provide assistance in addressing remedial action interface documents and the review of vendor data submittals.

2.2 Design Criteria

The purpose of this remedial action is to remove lead-contaminated soil from the Transformer Yard area. The area will be backfilled and graded so as to limit erosion effects. To accomplish this objective, soil contaminated with lead above the FRG of 400 mg/kg will be excavated and then the area will be backfilled and graded with clean soil to match the original slope of the area.

2.2.1 Management Control Procedures

All remedial action activities at CFA-10 will be performed in compliance with INEEL procedures. Procedures will be required in the following areas:

- Engineering Design
- Environmental Compliance Management
- Management Systems
- Occupational Safety and Health
- Security
- Environmental Restoration and Waste Management

- Conduct of Maintenance
- Quality Control.

2.2.2 Remediation

The design criteria for the remediation will require that the contaminated soil be removed and the excavated area backfilled with native soil.

The backfilled area will be designed so that the slope will protect the building from runoff. (See Appendix A, Drawing C-4 for design specifications.) The design criteria for the remediation will include the following:

- The excavation will be filled to the original ground surface level with a sloping finish grade to divert water and address possible erosion
- The soil will be compacted to prevent settlement and subsidence
- The Transformer Yard will not be revegetated.

2.2.3 Excavation and Disposal

Design criteria will be implemented to ensure protection of workers and the environment from direct exposure to the contaminant during excavation and disposal activities. The criteria for the disposal remedy include the following:

- Physically removing all soils with lead concentrations exceeding the FRG of 400 mg/kg
- For best management practice reasons, soils containing lead of 170 mg/kg–400 mg/kg may be excavated in order to better ensure removal of soil with potential unacceptable ecological risk. The project team will determine whether these soils will be excavated.
- Performing verification sampling in the excavated yard to ensure that the soil exceeding the FRG of 400 mg/kg for lead has been removed, and to ensure that soil with levels above the RCRA-characteristic hazardous waste level of 5 milligrams per liter (mg/L) has also been removed.
- Transporting excavated soil with lead concentrations above the RCRA-characteristic hazardous waste level of 5 mg/L to a permitted off-INEEL TSDF for stabilization and disposal.
- Backfilling excavated area with native soil.

2.3 DOE Related Codes, Standards, and Documents

The following national standards, codes, regulations, and site-specific documents will be used as the basis for the remediation of CFA-10, OU 4-13:

- DOE Order 5480.4A, "Environmental Protection, Safety and Health Program for DOE Operations"

- DOE Order 414.1A, "Quality Assurance"
- DOE Order 232.1A, "Occurrence Reporting"
- DOE Order 232.1, "Environmental Safety and Health Reporting"
- DOE Order 440.1A, "Worker Protection"
- DOE Order 470.1, "Safeguards and Security"
- DOE/ID-10389, *Track Two Sites: Guidance for Assessing Low Probability Hazard Sites at the INEEL*
- DOE/ID-10680, *Comprehensive Remedial Investigation/ Feasibility Study for the Central Facilities Area Operable Unit 4-13*
- DOE/ID-10719, *Final Comprehensive Record of Decision for Central Facilities Area Operable Unit 4-13.*

2.4 Engineering Standards

The references to the engineering standards and the specifications to which they apply are contained in Appendix B.

2.5 Environmental Compliance

The following is a list of the potential action-, chemical-, and location-specific ARARs identified in the ROD. A detailed discussion of the ARARs is presented in Section 4.

Action-Specific ARARs:

- IDAPA 58.01.01.585 and .586, "Toxic Air Emissions"
- IDAPA 16.01.01.650 and .651, "Fugitive Dust"
- IDAPA 16.01.05.006 (40 CFR 262.11), "Hazardous Waste Determination"
- IDAPA 16.01.05.008 (40 CFR 264.553), "Temporary Units"
- IDAPA 16.01.05.008 (40 CFR 264.554), "Remediation Waste Staging Piles"
- IDAPA 58.01.05.011 (40 CFR 268), "Land Disposal Restrictions"
- IDAPA 58.01.05.011 (40 CFR 268.49), "Alternative LDR Treatment Standards for Contaminated Soils"
- 40 CFR 61.92, "Radionuclide Emissions from DOE Facilities"
- 40 CFR 61.93, "Emission Monitoring"

Chemical-Specific ARARs:

- IDAPA 16.01.05 (40 CFR 261.20–24), "Rules and Standards for Hazardous Waste."

Location-Specific ARARs:

- 16 USC 4691.2, "National Historic Preservation Act, Historic Properties Owned or Controlled by Federal Agencies"
- 36 CFR 800.4, "National Historic Preservation Act, Identifying Historic Properties"
- 36 CFR 800.5, "National Historic Preservation Act, Assessing Effects"
- 25 USC 3002, "Native American Graves Protection and Repatriation Act, Custody"
- 25 USC 3005, "Native American Graves Protection and Repatriation Act, Repatriation."

2.6 Design Assumptions

The bounding assumptions under which these RD/RA activities will be performed include the following:

1. Contaminant concentrations of the remaining soil after excavation will not exceed concentrations above the stated FRG of 400 mg/kg.
2. Contaminated soil with lead concentrations above the RCRA-characteristic hazardous waste level of 5 mg/L will be excavated, treated by stabilization, and disposed of at an approved off-INEEL TSDF.
3. Contaminated soil with lead concentrations above the stated FRG, but below the 5 mg/L level for RCRA-characteristic hazardous waste will be excavated and disposed of at the CFA landfill.
4. For best management practices, contaminant concentrations of 170 mg/kg–400 mg/kg may also be excavated and disposed of at the CFA landfill. The remaining soil after excavation may be verified by testing to be below 170 mg/kg.
5. An off-INEEL TSDF will accept all RCRA-characteristic hazardous waste generated by this remedial action.
6. The design will commence in fiscal year 2001, and all remedial actions will occur in fiscal year 2001.
7. Impact on operations at the CFA will be minimal.
8. Institutional controls will not be required for the Transformer Yard after remedial action.

2.7 Quality Assurance

A quality level designation and record, included as Appendix C, has been prepared for all activities of the project. A quality level of III has been determined to be appropriate for this project. All design, procurement, and remedial action will be in accordance with the Quality Level III designation.

The *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2000b) has been adopted for this project and is incorporated by reference.

3. REMEDIAL DESIGN

This section describes the remedial design for the Transformer Yard (CFA-10) within OU 4-13. The remedial design section consists of eight subsections that address the project site description, preparation, earthwork, other related remediation requirements, surface water and erosion, subcontractor staging, and operations and maintenance. Design drawings for the Transformer Yard RD/RA Work Plan are presented in Appendix A, and technical specifications are contained in Appendix B. The remedial design section was developed in accordance with the design basis criteria identified in Section 2.

3.1 Project Site Description

CFA-10 is a fenced yard area located adjacent to the southeast side of Building CFA-667 (Appendix A, Drawing C-2). The Transformer Yard is oriented northeast-southwest and occupies approximately 808 m^2 (8,694 ft^2) (DOE-ID 2000c). The Transformer Yard has the dimensions of 43 meters (141 feet) along its southeast border, 19.2 meters (63 feet) along the southwest, 38.4 meters (126 feet) along the northwest, and 20.4 meters (67 feet) along the northeast (DOE-ID 2000a). The remedial site surface is comprised of soil (DOE-ID 2000a) with a concrete pad (6.1 meters [20 feet] wide by 20 meters [65 feet] long) oriented northwest-southeast located at the center of the Transformer Yard (DOE-ID 2000c). The pad has a grated rectangular drainage structure oriented northeast-southwest in the center of the pad. The pad drainage discharges to the soil surface at the northeastern and southwestern ends of the grated drainage structure.

The surface soil at the Transformer Yard consists of the Big Lost River alluvial deposits. The alluvial deposits are predominantly fine-grained silts of eolian origin as well as clays, silts, sands, and a relatively small quantity of gravels deposited by streams. Underlying the surficial soil are thick sequences of basalt lava flows and thin sedimentary interbeds that extend below the water table to a depth of several thousand feet. The composition of the sedimentary interbeds is similar to the surficial alluvial soil. There are no groundwater monitoring wells specifically associated with the Transformer Yard. Monitoring wells at WAG 4, north of CFA-10, indicate the depth from land surface to the water table is approximately 150 meters (492 feet) with the general direction of groundwater flow being to the south (DOE-ID 2000c).

3.2 Work Area Preparation

The fence and gates securing the Transformer Yard will be removed to facilitate remediation. All work area preparation activities will be conducted in accordance with the Transformer Yard Health and Safety Plan (HASP) (INEEL 2000a).

3.3 Earthwork

The remedy selected by the Agencies for Transformer Yard remediation is soil excavation and off-INEEL disposal. Earthwork in support of the selected remedy consists of excavating lead-contaminated soil down to a threshold concentration level, transporting contaminated soil to an off-INEEL treatment and disposal facility, and backfilling the excavation with clean soil, contoured to match the surrounding terrain, and sloped to divert water (Appendix A, drawing C-6). Excavated soil requiring treatment per 40 CFR 268.49 prior to disposal will be stabilized with cement at the off-INEEL TSDF, and soil not requiring treatment will be disposed of at the CFA landfill (DOE-ID 2000a). Dust controls (water spray, work stoppage during high winds, etc.) will be required during all earthwork activities. Work area access will be restricted to authorized personnel during all earthwork activities.

The following are actions necessary to implement the selected remedy (DOE-ID 2000a):

- Characterizing the lead concentration in the remedial site soil through field analysis and excavating soil with concentrations above the 400 mg/kg FRG. Analytical data from four sample locations show lead concentrations in the soil exceeding background levels at a one-foot depth, but not at two feet (DOE-ID 2000c). Soil contaminated above FRG concentrations will be excavated to a maximum depth of 3 meters (10 feet) or to basalt, although excavation to a maximum depth of 1 foot is expected. No basalt will be excavated as part of this remedial action. In addition, for best management practices, soil with lead concentrations of 170 mg/kg or higher may be excavated from the Transformer Yard in order to ensure removal of soil with an unacceptable ecological risk.

- Performing verification sampling in the excavated Transformer Yard to ensure that the FRG of 400 mg/kg for lead has been achieved.

- Transporting and disposing of excavated soil with a TCLP greater than 5 mg/L to a permitted off-INEEL TSDF or with a TCLP less than 5 mg/L to the CFA landfill.

- Backfilling excavated areas with clean soil. The remediated land surface will be sloped away from the adjacent building to prevent ponding and infiltration of precipitation runoff near the building foundation (Appendix A, Drawing C-4). All other excavated areas of the work area will be contoured to match the surrounding terrain.

3.4 Other Related Remediation Requirements

The procedures and specifications presented in this CFA-10 RD/RA Work Plan are designed to comply with all action-specific, chemical-specific, and location-specific federal and state ARARs listed in Table 13-1 of the OU 4-13 ROD for the Transformer Yard. The RD/RA Work Plan was also designed to be in compliance with all RAOs and FRGs identified in Section 9 of the OU 4-13 ROD (DOE-ID 2000a). Section 4 of this work plan presents the ARARs, RAOs, and FRGs applicable to the Transformer Yard (CFA-10) and the methods by which they will be met.

3.5 Permanent Markers and Warning Signs

Identification signs and brass corner markers will not be installed at the Transformer Yard (CFA-10) because all lead contamination above the FRG will have been removed. Therefore, there is no long-term institutional control anticipated (DOE-ID 2000a).

3.6 Surface Water and Erosion

No surface water issues or control structures are anticipated for the Transformer Yard (CFA-10) remediation procedures specified in this work plan. Upon completion of remedial activities, all lead contamination with concentrations above FRG levels will have been removed from the Transformer Yard (DOE-ID 2000a). All excavated areas will be sloped away from the building foundation or contoured to match the surrounding terrain to reduce surface water flow and prevent erosion.

Examination of the Big Lost River floodplain map, incorporated by reference, shows that the Transformer Yard is not located within the 100-year floodplain of that river system. No flood control structures relating to the Big Lost River were incorporated into the remedial design.

No erosion protection issues or activities are anticipated for the Transformer Yard (CFA-10) after completion of remediation procedures specified in this work plan. Upon completion of remedial activities, all lead contamination with concentrations above the FRG and objectives will have been removed from the Transformer Yard. No cover, or other control structures, will be installed at the Transformer Yard. Excavated areas will be backfilled with clean, native soil. The remediated land surface will be sloped away from the adjacent building to prevent ponding and infiltration of precipitation runoff near the building foundation (Appendix A, Drawing C-4). All other excavated areas will be contoured to match the surrounding terrain.

During remedial action work, erosion control procedures will consist of dust controls (water spray, work stoppage during high winds, etc.) to minimize wind erosion. Erosion controls will be required during all earthwork activities.

3.7 Subcontractor Staging

A subcontractor staging area will be established adjacent to the Transformer Yard. The staging area will encompass work areas near the Transformer Yard. The area will be used to store and operate project-related equipment and material close to the work, but without having personnel enter a contaminated area. The staging area will serve as a command post where contractor personnel conduct subcontractor oversight, and subcontractor personnel direct remedial operations, document activities, and perform other functions necessary to implement the RD/RA Work Plan. One area adjacent to the Transformer Yard will be designated for decontaminating personnel, equipment, and materials leaving the remedial site. A control point restricting entrance and exit between the decontamination area and the staging area will be established. All staging activities, equipment, and material will be in accordance with the Transformer Yard HASP (INEEL 2000a).

3.8 Operation and Maintenance

No operation or maintenance activities are anticipated for the Transformer Yard (CFA-10) after completion of remediation procedures specified in this work plan. No long-term institutional controls are anticipated, but they will be evaluated after remedial action (DOE-ID 2000a).

4. HUMAN HEALTH AND ENVIRONMENTAL COMPLIANCE

This section presents a summary of the human health and environmental compliance regulatory requirements for the remedial action at the OU 4-13 Transformer Yard (CFA-10). The remedial action objectives and the FRG are described in Section 4.1, along with the methods by which they will be met. Section 4.2 identifies the ARARs for the Transformer Yard and summarizes how the substantive requirements of the ARARs have been addressed by the remedial design or will be addressed during remedial action. The INEEL will also comply with the CERCLA offsite rule (40 CFR 300.440).

4.1 Remedial Action Objectives and Final Remediation Goals

The RAOs are designed to set the goals for protecting human health and the environment. The RAOs for CFA-10 are based on the results of both the human health and ecological risk assessments and are specific to the contaminant of concern and exposure pathways at the Transformer Yard. The RAOs were developed in accordance with the *National Oil and Hazardous Substances Pollution Contingency Plan* and the CERCLA remedial investigation/feasibility study guidance and refined through discussions among the Agencies (IDEQ, EPA Region 10, and DOE-ID). The Transformer Yard RAO as determined in the *Final Comprehensive Record of Decision for Central Facilities Area Operable Unit 4-13* (DOE-ID 2000a) is presented below.

- Prevent exposure to lead at concentrations over 400 mg/kg, the EPA residential screening level for lead.

The FRG for CFA-10 is a lead concentration of 400 mg/kg. Because there are no toxicity data for lead, the EPA residential screening criterion of 400 mg/kg was set as the FRG. No other contaminants pose an unacceptable risk. In order to meet the FRG, all soil that exceeds 400 mg/kg will be excavated from the Transformer Yard. Data indicate that excavating the top 0.5 ft of soil will likely result in a much lower cleanup level. This remedial action will satisfy the RAO for residential exposure to contaminants. All excavated Transformer Yard soil with lead concentrations greater than the 5 mg/L RCRA-characteristic hazardous waste level will be properly disposed of at a permitted TSDF. Soil with lead concentrations less than the TCLP of 5 mg/L will be disposed at the CFA Landfill.

4.2 Applicable or Relevant and Appropriate Requirements

Under CERCLA Section 121, response actions conducted within the external boundaries of the INEEL are exempt from obtaining federal, state, or local permits. However, these actions must comply with the substantive aspects of the ARARs specified for the Transformer Yard. The following subsections identify the ARARs for the Transformer Yard and summarize how the substantive requirements of the ARARs have been addressed by the remedial design or will be addressed during the remedial action. There are no "to be considered" requirements associated with the Transformer Yard (DOE-ID 2000a).

4.2.1 Rules for the Control of Air Pollution in Idaho – Toxic Air Emissions

The citations for this ARAR are IDAPA 58.01.01.585 and .586 (formerly IDAPA 16.01.01.585 and .586) and are action-specific requirements.

4.2.1.1 Substantive Requirement(s). Lead is the only contaminant of concern. There are no screening emission levels and acceptable ambient air concentrations for lead in Sections 585 and 586. No predicate facts for this project have been detected that would trigger the application of this ARAR.

4.2.2 Rules for the Control of Air Pollution in Idaho – Fugitive Dust

4.2.2.1 Substantive Requirement(s). As per IDAPA 58.01.01.650 and .651 (formerly IDAPA 16.01.01.650 and .651), all reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions, which might affect the movement of particulate matter.

4.2.2.2 Compliance Strategy. Dust suppression measures will be implemented, as necessary, during the remedial action to minimize the generation of fugitive dust. These measures may include water sprays, keeping the vehicle speeds up to a minimum, and work controls during periods of high wind.

4.2.3 National Emission Standards for Hazardous Air Pollutants

4.2.3.1 Substantive Requirements(s). The citations for these ARARs are 40 CFR 61.92 (radionuclide emissions from DOE facilities) and 40 CFR 61.93 (emission monitoring) and are action-specific requirements. There are no radiological contaminants of concern for the Transformer Yard. No predicate facts for this project have been detected that would trigger the application of this ARAR.

4.2.4 RCRA – Hazardous Waste Determination

The citations for this ARAR are IDAPA 58.01.05.006 and 40 CFR 262.11 and are action-specific requirements.

4.2.4.1 Substantive Requirement(s). A hazardous waste determination will be done in accordance with this requirement for excavated soil generated during remediation.

4.2.4.2 Compliance Strategy. Samples collected as part of the OU 4-13 remedial investigation/feasibility study and analyzed by the toxicity characteristic leaching procedure showed lead concentrations in the Transformer Yard soil exceeding 5 mg/L (maximum concentration 602 mg/L), the toxicity characteristic for lead. Thus, the excavated lead-contaminated soil may be a characteristic hazardous waste under 40 CFR 261 Part C.

4.2.5 RCRA – Temporary Units and Remediation Waste Staging Piles

The citations for these ARARs are IDAPA 58.01.05.008 (formerly IDAPA 16.01.05.008) and 40 CFR 264.553 (Temporary Units) and 40 CFR 264.554 (Remediation Waste Staging Piles) and are action-specific requirements. No predicate facts have been determined that would trigger the application of these ARARs. The following discussion indicates how the waste will be managed within a CERCLA Waste Storage Area (WSA).

4.2.5.1 Compliance Strategy. The transport containers will be located within the area of contamination (AOC) for the site, but outside the area that would potentially exceed the Occupational Safety and Health Administration (OSHA) action level for airborne exposure. The AOC is comprised of the area of soil excavation and the surrounding area in which remedial action supporting activities occur. The general public is excluded (see Figure C-2, Appendix A). The AOC will be managed as a CERCLA WSA. Temporary storage of CERCLA-generated waste within the AOC does not trigger land disposal restrictions (LDRs) or placement. No on-INEEL treatment will occur.

Prior to establishing the WSA, an environmental checklist will be prepared. The WSA will be registered with INEEL's Waste Generator Services (WGS).

The excavated soil will be deposited directly from the motorized excavation equipment scoop into transport containers. All other lead-contaminated soil items associated with the project will also be deposited directly into the containers. The containers will be placed on plastic sheeting to contain any accidental spills and aid spill recovery. The containers will be transported directly to the off-INEEL TSDF or CFA landfill for disposal depending on laboratory analytical results.

Temporary storage will commence with the excavation of the CFA-10 lead-contaminated soil and conclude when all contaminated soil has been excavated and removed from the AOC for final disposition. The time period for excavation is estimated to be a week, and the waste will be shipped for treatment, as necessary, and disposal shortly thereafter. The volume of soil excavated will be determined during the course of the excavation depending on the analytical results.

Lead-contaminated soil is the only hazardous waste associated with this remedial action. There are no incompatible waste issues for this project. The containers will be inspected to ensure they are clean initially, maintained in good condition, and kept closed except when adding, sampling, or measuring the waste. The containers will not be opened, handled, or stored in a manner that will cause them to leak. Sufficient aisle space (a minimum of 28 inches) will be maintained between and around the containers to allow the unobstructed movement of emergency equipment and personnel. The containers containing soil will be labeled "CERCLA WASTE" and have the appropriate hazardous waste number. Labels will be in the center on two sides of the containers and will be visible. A waste generation date will be visible for inspection. A description of the waste including lead as a contaminant of potential concern, operable unit, name and phone number of the generator point of contact, and container descriptions to ensure compliance with WGS guidance. If the waste remains in the CERCLA waste storage area more than a week, it will be inspected weekly. All records associated with the WSA will become part of the CERCLA project file.

All personnel adding waste to the WSA will be trained on INEEL procedures for the temporary storage of CERCLA-generated waste and will have current OSHA HAZWOPER training. If there is only one employee in the WSA, they will have immediate access to an emergency communication device such as a telephone.

The WSA will be closed in a manner that minimizes the need for further maintenance and controls, minimizes, or eliminates the escape of any hazardous waste or constituents to the environment.

4.2.6 Land Disposal Restrictions and Alternative LDR Treatment Standards for Contaminated Soil

The citations for these ARARs are IDAPA 58.01.05.011 (formerly 16.01.05.011) and 40 CFR 268 (LDRs) and 40 CFR 268.49 and are action-specific requirements.

4.2.6.1 Substantive Requirement(s). These provisions identify hazardous wastes that are restricted from land disposal and treatment standards that need to be met prior to disposal. Soil contaminated with characteristic hazardous waste must comply with LDRs prior to placement into a land disposal unit.

4.2.6.2 Compliance Strategy. LDRs will not be triggered while the waste is being excavated managed, and stored in transport containers because these activities will occur within the AOC (see Figure C-2, Appendix A). LDRs will need to be met for off-INEEL disposal. The off-INEEL disposal

facility will be responsible for treating the lead-contaminated soil, as necessary, to meet LDRs or alternative LDR treatment standards for contaminated soil prior to disposal. Contaminated waste that is not characteristic for lead will be disposed of at the CFA landfill.

4.2.7 RCRA – Hazardous Waste Characteristics Identification

The citations for this ARAR are IDAPA 58.01.05.005 (formerly 16.01.05.005) and 40 CFR 261.20–24 and are chemical-specific requirements. The excavated soil may be characteristic for lead (Table 1 in 40 CFR 261.24).

4.2.7.1 Substantive Requirement(s). Assign an applicable EPA Hazardous Waste Number to solid wastes that exhibit RCRA characteristics for hazardous waste.

4.2.7.2 Compliance Strategy. No Transformer Yard waste is an ignitable, corrosive, or reactive characteristic waste. Remedial site wastes will be tested using the TCLP for lead after excavation. If lead concentrations equal or exceed the 40 CFR 261.24 Table 1 regulatory level of 5 mg/L, an EPA Hazardous Waste Number of D008 will be assigned to all applicable documentation.

4.2.8 Clean Water Act–National Pollutant Discharge Elimination System

The citation for this ARAR is 40 CFR 122.26 and is an action-specific requirement.

4.2.8.1 Substantive Requirement(s). The INEEL has estimated a geographical area where storm water has a reasonable potential to discharge to the Big Lost River System (DOE 1993). The area is referred to as the storm water corridor. CFA-10 is not in this corridor. Therefore, the requirements of the National Pollutant Discharge Elimination System for storm water discharges are not applicable to the project. No predicate facts have been determined that would trigger the application of this ARAR.

4.2.9 National Historic Preservation Act

The citation for this ARAR is 16 United States Code (USC) 4691.2. Regulations are found at 36 CFR 800, and it is a location-specific requirement.

4.2.9.1 Substantive Requirement(s). The identification of historic properties and assessment of effects by federal agency actions are regulated by this citation.

The federal agency head or designee with authority over a specific undertaking (Agency Official) shall consult with the State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) to:

- Determine and document the area of potential effects
- Review existing information on historic properties within the area of potential effects, including data concerning possible historic properties not yet identified
- Seek information from consulting parties and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the area, and identify issues relating to the undertaking's potential effects on historic properties

- Gather information from any Indian tribe to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register.

Based on information collected and in consultation with the SHPO/THPO and any Indian tribe that might attach religious and cultural significance to properties within the area of potential effects, the Agency Official shall take the necessary steps to identify historic properties within the area of potential effects.

In consultation with the SHPO/THPO and any Indian tribe that attaches religious and cultural significance to the identified properties and guided by the Secretary's Standards and Guidelines for Evaluation, the Agency Official shall apply the National Register Criteria (36 CFR 63) to properties identified within the area of potential effects.

If the Agency Official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in 36 CFR 800.16(I), the Agency Official shall provide documentation of this finding to the SHPO/THPO. The Agency Official shall notify all consulting parties, including Indian tribes, and make the documentation available for public inspection prior to approving the undertaking.

If the Agency Official finds that there are historic properties that may be affected by the undertaking, or the SHPO/THPO or the Council objects to the Agency Official's finding, the Agency Official shall notify all consulting parties and invite their views on the effects and assess adverse effects, if any, in accordance with 36 CFR 800.5. (The Council is an organization that issues implementing regulations, provides guidance and advice on the application of the procedures, and generally oversees the operations of the 36 CFR 800 regulatory process.)

4.2.9.2 Compliance Strategy. The CFA-10 Transformer Yard has been intensely surveyed for cultural resources. No cultural properties have been identified in any of these areas, nor within 100-meter wide zones surrounding them. The remedial activities should have no effect on properties eligible for nomination to the National Register of Historic Places if they are restricted to these surveyed areas and the INEEL Stop Work Authority is invoked in the unlikely event that cultural artifacts (bones, stone flakes, "arrowheads" or other stone tools, etc.) are unexpectedly encountered as the work progresses. Documentation of this finding of "no historic properties present" is being provided to the SHPO and Shoshone-Bannock Tribes and is accessible to the public through the INEEL Administrative Record and Information Repository.

4.2.10 Native American Graves Protection and Repatriation Act

The citation for this ARAR is 25 USC 3002. Regulations are found at 43 CFR 10, and it is a location-specific requirement.

4.2.10.1 Substantive Requirement(s). The ownership of Native American human remains and objects are regulated under this citation. The ownership of control of Native American cultural objects (human remains, associated funerary objects, unassociated funerary objects, sacred objects, or cultural patrimony) that are excavated or discovered on federal or tribal lands after November 16, 1990, shall be (with priority given in the order listed):

- For claimed human remains and associated funerary objects: the lineal descendants of the Native American

- For claimed unassociated funerary objects, sacred objects, cultural patrimony objects, and for human remains and funerary objects if lineal descent cannot be ascertained

- The Indian tribe on whose tribal land such remains or objects were discovered

- The Indian tribe which has the closest cultural affiliation with such remains or objects and which, upon notice, states a claim for such remains or objects

- The Indian tribe which presents the strongest cultural relationship with the remains or objects if no cultural affiliation of the remains or objects can be reasonably ascertained

- For unclaimed remains and objects: the remains and objects shall be disposed of in accordance with regulations promulgated by the Secretary of Interior in consultation with the review committee established under Section 8 of this title, Native American groups, representatives of museums, and the scientific community.

The inadvertent discovery of human remains or objects shall be addressed as follows:

- Any person who knows, or has reason to know, that such person has discovered cultural items on federal or tribal lands shall notify, in writing, the Secretary of Interior, or head of any other agency or instrumentality of the United States, having primary management authority with respect to federal lands and the appropriate Indian tribe with respect to tribal lands, if known or readily ascertainable.

- If discovered in connection with an activity, the person shall cease the activity in the area of the discovery, make a reasonable effort to protect the items discovered before resuming such activity, and provide notice as stated above. Following notification, and upon certification by the notified authority, the activity may resume after 30 days of such certification.

- The disposal of and control over any cultural items excavated or removed shall be determined as stated above.

Nothing in this citation shall prevent the governing body of an Indian tribe from expressly relinquishing control over any Native American human remains, or title to or control over any funerary object, or sacred object.

4.2.10.2 Compliance Strategy. Intensive archaeological surveys completed at the CFA-10 Transformer Yard have revealed no indications of Native American human remains or other items governed by this Act. In the event that such remains or items are unexpectedly discovered as work progresses, INEEL employees are instructed to stop work immediately and contact the INEEL Cultural Resource Management Office for guidance.

5. REMEDIAL ACTION WORK PLAN

This section presents the remedial action work plan for the Transformer Yard (CFA-10) within OU 4-13. The work plan describes the necessary steps and documentation required to complete the remedial action discussed in Sections 1.0 through 4.0. The 15 subsections comprising the work plan section are identified below. The subsections include the remedial action work tasks, contractor oversight, project cost estimates and schedules, and construction complete report. Appendix A, Design Drawings; Appendix B, Technical Specifications; and Appendix D, Waste Management Plan, support this RD/RA work plan section.

5.1 Relevant Changes to the Statement of Work

There are no significant changes in the content of the Statement of Work (SOW) for the *Remedial Design/Remedial Action Work Plan, Idaho National Engineering and Environmental Laboratory, Central Facilities Area, Operable Unit 4-13* (May 2000). There are two minor changes to the SOW as described below:

- The lead-contaminated soil will be stabilized at the off-INEEL TSDF. No soil will be stabilized at the INEEL. This approach will meet the same requirements, but was found to be more cost-effective during development of the remedial design.

- The Transformer Yard will not be revegetated, but will have gravel mixed with replaced soil to facilitate the anticipated use of the remediated site as a vehicle parking area. It was noted during development of the remedial design that there is currently little vegetation in that area and future use of the area as a roadway/parking lot does not require vegetation.

5.2 Subcontracting Plan

The subcontractor will be primarily responsible for the remedial site preparation, soil sampling and analysis for lead concentration, soil excavation, removal of contaminated soil, work area reclamation, and related activities. The specific subcontractor work task elements necessary to complete this work are identified in Section 5.3 of this RD/RA Work Plan.

Contracts will be drawn to compensate subcontractors a fixed amount for the labor hours and materials expended as specified in the subcontracts. The contract will provide a fixed compensation per unit of work for those work tasks that are not clearly defined, such as the volume of contaminated soil to be excavated and transported to an off-INEEL TSDF. Subcontractors will be responsible for the satisfactory performance of all subcontractor work elements, including any elements the subcontractor contracts out to other parties. The contracting process will include a Bechtel BWXT Idaho, LLC (BBWI) statement of work, contractor proposal, BBWI acceptance, notice to proceed, and kick off meeting.

5.3 Remedial Action Work Tasks

This section describes the remedial action work tasks to be performed by the subcontractor in support of this RD/RA Work Plan for the Transformer Yard (CFA-10). The work task section addresses subcontractor responsibilities for completing the tasks and provides guidance for contractor oversight of subcontractor activities. The subcontractor work tasks identified in this section are supplemented by the detailed information provided in the design drawings (Appendix A), technical specifications (Appendix B), and the BBWI statement of work for this project. The contractor has the option to structure the statement of work as a single contract encompassing all the subcontracted work tasks or to

divide the work into components and issue a separate statement of work for each component. The subcontractor may subcontract out portions of the work tasks awarded to that subcontractor, but will remain responsible to the contractor for the satisfactory completion of all aspects of the subcontract and compliance with all aspects of this RD/RA Work Plan. The disposal of all project-generated wastes, including nonconditional industrial, conditional industrial, or hazardous waste, will be coordinated through Waste Generator Services.

5.3.1 Premobilization

The subcontractor shall provide the contractor with all required submittals, work plans, bonds, and insurance. The subcontractor will verify that all remedial activity personnel, including any nonsubcontractor personnel working under contract for the subcontractor, will be familiar with the relevant provisions of this RD/RA Work Plan's health and safety provisions (Section 5.12). The subcontractor will provide the contractor with documentation confirming that all project personnel working for or through the subcontractor have received the necessary training and completed the medical examination requirements. The Statement of Work (SOW) will identify the specific submittals, training, and medical information. This requirement must be fulfilled before the subcontractor is allowed to mobilize for the project. The submitted documents will demonstrate/certify that the subcontractor can meet and satisfy the requirements of the SOW and the project design.

5.3.2 Mobilization

Mobilization refers to the work the subcontractor must perform prior to remedial operations. Mobilization generally consists of the implementation of required administrative, engineering, and health and safety controls. Examples of mobilization activities include, but are not limited to, the following:

- Assembling the project work team and conducting a prejob briefing on work task assignments in accordance with the health and safety provisions (Section 5.12) and Management Control Procedure (MCP)-3003. Specific elements of the prejob briefing will include identifying work to be performed and communicating an understanding of scope hazards and mitigation to enable safe completion of the work.

- Delivering and storing equipment and materials adjacent to the remedial site, including a construction management inspection and acceptance before heavy equipment can be brought onsite.

- Identifying and demarcating the work areas, including installing any security fencing, signs, and posting.

- Obtaining any required INEEL permits or authorizations for remedial activities.

- Arranging for the installation of any necessary utility connections.

- Setting-up the subcontractor project control area.

5.3.3 Borrow, Haul, and Stockpile

Clean, native soil is required for backfilling into the excavation at the remedial site. The required soil is available from borrow sources located at the INEEL. All sources of native soil used to backfill the remedial excavation have been previously determined to be free of contamination.

Borrow activities will be conducted in compliance with Appendix B, Technical Specification Number 02200, Earthwork, and an approved INEEL Form 1595. The subcontractor is responsible for developing an operation to collect the native soil from the authorized borrow source, stockpile it prior to transportation, and transport it to the remedial site. All equipment and activities associated with the soil hauling and stockpiling will be performed outside the contaminated area of the Transformer Yard.

Soil collection and transport will require the use of heavy earthwork equipment including scrapers, bulldozers, loaders, and dump trucks. The subcontractor will consult with applicable INEEL personnel to plan and coordinate this activity to ensure the safe and efficient transport of soil materials across INEEL roads. The subcontractor is responsible (Appendix B, Technical Specification 02200, Earthwork) for maintaining the route of soil transport during operations and for returning the haul roads to their preproject condition after completion of the hauling operation. The SOW will require that the subcontractor develop a traffic management plan, including documentation of the haul road conditions prior to soil transport operation.

5.3.4 Clearing the Remediation Site

The subcontractor will clear the remedial site of all fencing material and debris, including painted rocks and metal chunks, but not vegetation. Clearing activities will be performed in a manner that minimizes any disturbance to the underlying soil. The subcontractor will remove the chain-link fence, supporting posts, gates, and signs that encompass three sides of the Transformer Yard as shown in Drawing C-2, Appendix A. The fencing material and remedial site debris will be visually inspected to detect any soil adhering to its surface. Soil detected on the fencing material or debris will be removed following the project decontamination procedures presented in Section 5.10 of this work plan. The painted portions of the fence will be cut out and disposed with soil going to the TSDF. The painted rocks will also be disposed with soil going to the TSDF. The clean fencing material and debris will be disposed of in the CFA landfill, and any removed soil will be disposed of according to the decontamination plan. The metal chunks will be recycled.

The subcontractor shall confine clearing operations to the Transformer Yard, adjacent areas necessary for project activities, and areas directed by the contractor. Any area outside the designated areas that is damaged or disturbed by the subcontractor's operation shall be repaired and returned to its preproject condition by the subcontractor.

5.3.5 Earthwork

Earthwork at the Transformer Yard consists of the excavation and removal of lead-contaminated soil above a threshold level and related remedial site restorative activities. Preremediation sampling to determine waste disposition will have occurred prior to mobilization for remedial action work tasks. This section identifies the main earthwork task elements of the project and is supplemented by the details and specifications provided in the design drawings (Appendix A). The earthwork will be performed in accordance with Appendix B, Technical Specification 02200.

All remedial activities personnel will be familiar with relevant health and safety provisions, and all remedial operations will be conducted in accordance with the Transformer Yard HASP (INEEL 2000) as delineated in Section 5.12 of this RD/RA Work Plan. Personal protective equipment (PPE) will be worn by personnel as directed by the health and safety provisions (Section 5.12) or as determined by the industrial hygienist present at the remedial site.

The main earthwork task elements at the Transformer Yard consist of soil excavation, soil sampling and analysis (DOE-ID 2001), and backfilling the excavation with clean soil. Dust controls

(water spray, work stoppage during high winds, etc.) will be required during all earthwork activities. Remedial site access will be restricted to authorized personnel during all earthwork activities. Each of the earthwork task elements is described below.

Prior to excavating the Transformer Yard, subcontractor personnel will use gloved hands to collect pieces of lead approximately 2.5 cm (1 in.) in diameter, or larger, from the site for recycling.

The excavated lead-contaminated soil, and any other contaminated material, will be deposited directly into contractor provided transport containers. The containers will be placed on heavy-duty plastic sheeting extending a minimum 1.5 m (5 ft) beyond the base of each container. The sheeting will be used to contain any accidental spill and aid spillage recovery. The waste will be transported in the containers to the off-INEEL TSDF or the CFA Landfill (as applicable).

The concrete pad will be tested for lead TCLP concentration during preremediation sampling, removed from the remedial site, and disposed of at either the off-INEEL TSDF or the CFA landfill, as appropriate. If the concrete cannot be effectively decontaminated, the concrete will be disposed of at the off-INEEL TSDF. The soil underlying the concrete pad will be tested and excavated (if necessary).

The subcontractor will begin excavating the Transformer Yard by removing the upper 12 inches of site soil in those areas designated through preremediation sampling as having lead concentrations in the soil above the TCLP of 5 mg/L. See the Field Sampling Plan for the preremediation sampling areas. The subcontractor will then remove six inches of soil in all the other preremediation sampling areas of the site that have lead concentrations greater than 170–400 mg/kg (Appendix A, drawing C-4). This excavated soil will be placed in separate transport containers. All removal operations will be accomplished by motorized equipment in a manner that does not spread soil in or out of the currently excavated areas. Subcontractor workers will survey the soil surface in the excavated areas using a real-time x-ray fluorescence field analytical instrument per the Field Sampling Plan. Soil samples will also be taken and sent off for analysis per the Field Sampling Plan. Areas of lead contamination will be marked for additional soil removal. Additional soil removal will be conducted in 3-inch vertical increments using the motorized equipment, until the lead concentration in the soil is below 170–400 mg/kg. The additional excavated soil will be placed in the same containers as the 6-inch increment soil was placed in. Once an area has been excavated to lead concentrations below 170–400 mg/kg, the workers will relocate to an adjacent portion of the remedial site and repeat the process.

As specified in the ROD, the maximum excavation depth will be 3 meters (10 feet) or to basalt. No basalt will be excavated as part of this remedial action (DOE-ID 2000a).

After excavating the entire remedial site to depths representing lead concentrations below 170 mg/kg–400 mg/kg as determined by field analytical results and as decided by the project team, verification samples will be collected from the soil surface for laboratory analysis in accordance with the Transformer Yard Field Sampling Plan (DOE-ID 2001). The analytical results of these verification samples will be used to ensure that the FRG of 400 mg/kg for lead removal has been met.

Soils in the transport containers with lead concentrations above the RCRA-characteristic hazardous waste level of 5 mg/L, based on preremediation sampling results (if any), will be transported to an off-INEEL TSDF, treated by stabilization with cement, and the stabilized soil sampled to meet the LDR. Soils not exceeding the 5 mg/L concentration will be disposed at the CFA landfill.

The subcontractor will backfill and compact the excavated areas with clean, native gravel pit soil. The remediated land surface will be graded to match the original slope of the area (Design Drawing C-5, Appendix A). All other excavated areas of the remedial site will be contoured to match the surrounding

terrain. The subcontractor will place a gravel cover over the remedial site and return any other areas disturbed by subcontractor activities to its condition prior to remedial action activities.

5.3.6 Institutional Controls

No long-term institutional controls are anticipated for the Transformer Yard, but they will be evaluated after remedial action in accordance with the ROD (DOE-ID 2000a).

5.3.7 Demobilization

After completion of all remedial activities, the subcontractor will demobilize from the remedial site. All equipment and materials that were never on the remedial site, or never in contact with remedial site contaminants, will be removed. All equipment and materials exposed to contaminants will be decontaminated according to the project decontamination plan (Section 5.10) and either removed from the remedial site or properly disposed of in an authorized facility depending on equipment/material reusability.

Temporary security fencing, personnel and equipment, material stockpiles, remediation derived waste, and any structures erected to support project activities will be removed and transported from the remedial site or properly disposed of in an authorized facility.

5.4 Field Oversight/Remedial Action Management

The DOE-ID remediation project manager will be responsible for notifying the EPA and IDEQ of project activities and will be the single contact point for all routine communication between the Agencies, maintenance and operations (M&O) contractor, and RD/RA contractor.

The M&O contractor for the Transformer Yard project is BBWI. BBWI will provide field support services for health and safety, quality assurance, and landlord services. The RD/RA contractor responsible for field oversight and remedial action management for this project will be selected by the M&O contractor after completion of this document.

5.5 Project Cost Estimate

The project cost estimate is included in Table 5-1. The cost estimate may be revised during each submittal of this document, based on comments to the design and any post-ROD sampling that is conducted.

5.6 Project Schedule

The OU 4-13, CFA-10 remedial action schedule is included as Table 5-2. This schedule covers all project tasks from the design phase to the completion of the remedial action report. Administrative and document preparation activities are based on an 8-hour day, 5-day workweek. Field activities are based on a 10-hour day, 4-day workweek. The schedule does not include any contingency for delays due to late or slow document review or delays in field work due to poor weather conditions.

Table 5-1. Remedial Action Cost Estimates.

	ROD Cost Element[a] $K	Updated Cost Element $K
FFA/CO Management	153[b]	50
Remedial Action	607	335
Site Closure Documentation	77	70
Total	837	455[c]

a. Cost estimates include 30% contingency and a factor of 1.0727 to convert from FY 1999 to FY 2001 dollars.

b. Cost estimate decreased by half since project is half completed.

c. Estimated costs are less due to better refinement of activities with development of the RD/RA Work Plan. It is also due to a concerted effort to incorporate cost efficiencies in the planning.

Table 5-2. Remedial Action Schedule.

Activity	Start Date	Completion Date	Enforceable Date
OU 4-13 Final Comprehensive ROD Finalized	NA	7/31/00	
Remedial Design			
RD/RA SOW Finalized	NA	7/ 00	
Draft RD/RA Work Plan	7/17/00	9/29/00	
RD/RA Table Top Review	10/02/00	10/13/00	
Submittal of Draft RD/RA Work Plan to Agencies	NA	12/14/00	5/23/01
Agencies Review of Draft RD/RA Work Plan	12/14/00	1/27/01	
Draft Final RD/RA Work Plan	1/28/01	3/13/01	
Agencies Review of Draft Final RD/RA Work Plan	3/14/01	3/28/01	
RD/RA Work Plan Finalized	3/29/01	4/16/01	
Remedial Action			
Vendor Procurement	3/29/01	4/09/01	
Award Subcontract(s)	NA	4/09/01	
Subcontractors Mobilize to CFA-10	5/24/01	5/24/01	10/31/01
Excavation	5/24/01	7/12/01	
Verification Sampling	5/28/01	9/27/01	
Backfilling, Compaction, and Grading	10/25/01	10/31/01	
Prefinal Inspection	11/19/01	11/19/01	
Demobilization	11/19/01	11/19/01	
Prefinal Inspection Report	5/24/01	11/20/01	
Submittal of Prefinal Inspection Report to Agencies	11/23/01		
Agencies Review of Prefinal Inspection Report	11/23/01	12/09/01	
Final Inspection	12/20/01		
Submittal of Construction Complete Report	2/18/02[a]		

a. Date corresponds to 60 days after the final inspection.

5.7 Inspections

The Agencies project managers, or their representatives, may inspect the remedial site during remedial operations to observe the progress of the remedial activities and to assess compliance with the remedial design requirements and procedures specified in the remedial action work plan. The inspections will be conducted at the discretion of the Agencies and may occur at any time during the remedial action. Digital photographs depicting the progress of site cleanup may be sent to the Agencies in lieu of a site visit during the remedial action.

5.7.1 Prefinal Inspection

The prefinal inspection will be conducted by a project manager, or representative, from each Agency prior to completing the remedial action activities. The RD/RA contractor will develop a project checklist used to document the prefinal inspection approximately three weeks prior to the inspection. The checklist will be subject to Agency approval. Action for resolution and the anticipated schedule for completion will be noted next to the outstanding items and documented on the prefinal inspection checklist. The DOE-ID will notify the EPA and IDEQ approximately two weeks before the prefinal inspection date.

After the prefinal inspection, the DOE-ID remediation project manager will be responsible for:

- Inspecting the outstanding items after they are completed
- Recording the date the work was completed and inspected
- Authorizing remedial action activities needed to resolve and complete any outstanding items.

5.7.2 Prefinal Inspection Report

After the prefinal inspection, the prefinal inspection report will be created and submitted to the EPA and IDEQ. The prefinal inspection report is a secondary document, so the report may or may not be revised after comment. The comments will be addressed in the construction complete report. This comment resolution procedure is in accordance with Section 8.4 of the FFA/CO (DOE-ID 1991).

The prefinal inspection report will include the following:

- Names, titles, and organizational affiliation of the inspection participants
- Inspection checklists identifying any project components that are not in compliance with the drawings or specifications
- Discussion of inspection findings
- Corrective action plans to correct any deficiencies
- Date of the final inspection.

All of the outstanding soil removal requirement issues, along with the actions required to resolve those items, will be identified and approved by the Agencies during the prefinal inspection. The prefinal inspection report will then document any other unresolved items and the effort required to resolve them.

5.7.3 Final Inspection

A final inspection is not necessary if the Agencies agree that there was no significant findings during the prefinal inspection. In either case, DOE-ID may choose to conduct a final inspection. All

excess materials and nonessential construction equipment will be removed from the remedial site prior to the final inspection, although some equipment may remain adjacent to the remedial site to address any items observed during the inspection. The final inspection confirms the resolution of all outstanding items identified in the prefinal inspection and verifies that the Transformer Yard (CFA-10) remedial action has been completed in accordance with the requirements of the ROD (DOE-ID 2000a).

5.8 Construction Complete Report

The contractor will prepare a construction complete report after completion of all remedial site activities, including demobilization and remedial site restoration. The report will be submitted to the Agencies. The construction complete report will be used in the preparation of the remedial action report, which is a primary document. The main elements of the report are identified below.

- Identification of the CFA-10 RD/RA Work Plan tasks, including any modifications to the original work plan and certification that the tasks have been completed.
- Any modifications made to the work plan remedial design during the remedial action phase. The specific work task change, purpose and rationale for the change, and results of the change will be presented.
- Problems encountered during the remedial action and resolutions to these problems.
- Resolution of any outstanding items identified in the prefinal inspection report. Outstanding items will be described, comments addressed, and determinations finalized in the construction complete report, instead of by issuing a revised prefinal inspection report.
- Certification that the remedial action remedies have been completed. DOE-ID will provide a statement that the remedies have achieved the requirements of the ROD.
- As-built drawings showing final contours.
- Final total cost figures with supporting information for remedial action work.
- Results of the final inspection. The final inspection will be documented in the draft version of the construction complete report, submitted to the Agencies' project managers within 60 calendar days of the final inspection, and used to resolve prefinal inspection issues.

5.9 Operations and Maintenance Plan

No operation or maintenance activities are anticipated for the Transformer Yard (CFA-10) after completion of remediation procedures specified in this work plan. No long-term institutional controls are anticipated for this remedial site, but they will be evaluated after remedial action (DOE-ID 2000a). Consequently, an Operations and Maintenance Plan is not necessary and was not prepared for this work plan.

5.10 Decontamination Plan

This decontamination plan was designed for the remedial action work at the OU 4-13 Transformer Yard (CFA-10) as described in Section 5.3. The site contaminant is an elevated concentration of lead in the surface and shallow subsurface soil. This plan addresses the decontamination of personnel, samples, and equipment that have come in contact with excavated soil. The contaminated area (work control zone), decontamination area (work control zone decontamination area), and staging area (support zone) are shown in Appendix A.

A dry decontamination or a deconning liquid approach will be employed as decided on by Field Project Team personnel. Solid decontamination waste will be containerized and properly disposed in an authorized facility. All decontamination activities will be documented in the remedial site logbook. The health and safety officer (HSO) will be consulted when the work area is being defined/delineated. All decontamination activities will be conducted in accordance with the Transformer Yard HASP (INEEL 2000a).

During field activities at the Transformer Yard, a wash station will be available to field personnel for washing their hands and face. All personnel will use the wash station upon leaving the work control zone, after handling samples, etc.

5.10.1 Contamination Control and Prevention

Everything that enters the work control zone has the potential of becoming contaminated. Contamination control and prevention will be implemented throughout the project to minimize personnel contact with potentially contaminated surfaces. As applicable, the following contamination control and prevention measures will be employed:

- Identifying potential sources of contamination and when discovered design containment, isolation, and/or engineering controls to eliminate or mitigate the contact or release of these contaminants
- Limiting the number of personnel, equipment, and materials that enter the work control zone
- If contamination is found on the outer surfaces of equipment, immediate decontamination will be implemented to prevent the potential spread of contamination
- Utilizing only the established control entry and exit points from the work control zone will minimize the potential for cross-contamination and expedite contamination control surveys
- Wearing disposable outer garments and utilizing disposable equipment (where possible).

5.10.2 Personnel and Equipment Decontamination

Decontamination procedures for personnel and equipment are necessary to control contamination and protect personnel. Chemical contamination will be decontaminated from surfaces at the exit from the work control zone and support zone transition boundaries.

5.10.2.1 Personnel Decontamination. Engineering controls in conjunction with project contamination prevention and control practices, and proper protective clothing donning and doffing will serve as the primary means to eliminate the need for personnel decontamination. Following the donning of protective clothing, your work buddy, the field team leader or field construction coordinator, and/or HSO will check to verify proper donning technique. The greatest potential for personal contamination exists when performing excavating, sampling, sample monitoring, and from improper doffing of contaminated protective equipment (during a containment failure scenario only) when exiting the work control zone.

The PPE selection, as identified in the safe work permit, will provide for the layered barriers required to prevent permeation and minimize external surface contamination. The options for the outermost protective clothing layer (Tyvek QC® and Saranex-23C™) will be determined by the industrial hygienist (IH) and HSO.

5.10.2.2 Decontamination in Medical Emergencies. If a person is injured or becomes ill, they will immediately be evaluated by Medic First Aid trained personnel at the project. If the injury or illness

is serious, then the field team leader or field construction coordinator will contact the Warning Communications Center to summon emergency services to the project. Other notifications will be made per Section 11 of the HASP.

Medical care for serious injury or illness will not be delayed for decontamination. The IH, depending on the type of contamination, will accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel.

5.10.2.3 Equipment Decontamination. Containment engineering and isolation controls will be used to prevent contamination from sampling containers. These engineering controls will serve to isolate and eliminate or mitigate many of the potential contamination pathways to prevent equipment contamination and greatly reduce the need for decontamination.

Visual observation can be used to detect contamination. The IH and environmental personnel will evaluate any contaminated equipment to determine the most appropriate decontamination method based on the nature of the contaminated item, level of contamination, required effort to decontaminate the item, and requirement for decontaminating versus disposing of such items. In some cases, the level of effort and potential for spreading contamination from conducting decontamination tasks far outweighs the benefit from engaging in extensive decontamination efforts to return an item to service. A cost versus benefit evaluation will be done on items that have extensive contamination or are relatively inexpensive. Low-cost consumable items will be discarded if initial decontamination efforts fail or extensive decontamination is required. For decontamination of free-released equipment, a decontamination pad may be established in the work control zone decontamination area.

5.10.3 Disposal of Contaminated PPE and Equipment

5.10.3.1 Storage and Disposal of Contaminated Materials. All PPE and other disposal material directly used in sampling and decontamination will be managed, using the methods recommended by the WGS. Specific guidance for disposal of project waste, including PPE and equipment, is outlined in the Transformer Yard Field Sampling Plan (DOE-ID 2001).

5.10.3.2 Project Sanitation and Waste Minimization. Potable water and soap will also be available at the project for personnel to wash their hands and face upon exiting the work area.

Waste materials will not be allowed to accumulate at the project. Appropriate containers for contaminated and noncontaminated waste will be maintained at step-off areas, in the support zone, and at other appropriate locations at the project. Personnel should make every attempt to minimize waste through judicious use of consumable materials. All project personnel are expected to make good housekeeping a priority at the project.

5.11 Protocol and Coordination of Field Oversight

This section presents the protocols and coordination used for EPA and IDEQ field oversight of the remedial action activities at the Transformer Yard. The DOE will notify EPA and IDEQ WAG managers of all major remedial action activities prior to their commencement. The *Federal Facility Agreement and Consent Order* (FFA/CO) requires that a minimum notification of 14-calendar days be provided prior to prefinal inspection activities. Section 5.7 identifies the activities associated with the preliminary, prefinal, and final inspections. The DOE will provide EPA and IDEQ WAG managers with at least a 14-day notification of the commencement of subcontractor remedial operations. As described in Section 5.3, the primary remedial activities will consist of contaminated soil excavation, off-INEEL transport, and clean soil backfill into the excavation. These activities will occur as a single event.

Visitors must be in compliance with INEEL badging and other security requirements. Visitors on or adjacent to remediation work areas must have proper authorization, appropriate safety training, and conduct their activities in compliance with the Transformer Yard HASP (INEEL 2000a).

5.12 Health and Safety Provisions

The Transformer Yard HASP (INEEL 2000a) is a separate document from this RD/RA Work Plan. The referenced HASP is a living document and may be updated per INEEL MCP-255 requirements and approval of the WAG 4 safety, health, and quality point of contact. This plan covers the following items:

- Scope of work overview
- Project site responsibility
- Project training requirements
- Occupational medical program
- Accident prevention programs
- Safe work practices
- Worksite control and security
- Hazard evaluation
- Personal protective equipment
- Decontamination
- Emergency Preparedness Plan.

5.13 Spill Prevention/Response Program

Any spill of potentially hazardous materials will be remediated in compliance with the requirements of the *INEEL Emergency Plan/RCRA Contingency Plan* (INEEL 2000b) and the *INEEL Emergency Plan/RCRA Contingency Plan*, Addendum 1 - Central Facilities Area (INEEL 2000b).

All materials will be handled in accordance with the specifications contained in the applicable material safety data sheets. A complete set of material safety data sheets for materials present at the remedial site will be located at the command post. In the event of a spill, the emergency response plan for the remedial site (Section 5.12) will be implemented. All materials at the work site will be stored in accordance with the applicable regulations and will be stored in approved containers.

5.14 Field Sampling Plan

The Transformer Yard Field Sampling Plan (DOE-ID 2001) is a separate document from this RD/RA Work Plan. The referenced Field Sampling Plan is a living document and may be updated per INEEL MCP-255 requirements. This plan covers the following items:

- Description of site and surrounding areas
- Specific objectives and data uses

- Sample locations, frequency, and media
- Sample identification numbers/planning tables
- Specific sampling equipment and procedures
- Sample handling and analysis
- Field documentation
- Waste minimization/waste management.

5.15 Waste Management Plan

This section provides a brief summary of the types of waste streams expected to be generated by the remedial action activities at the Transformer Yard. A detailed description of the waste streams and their disposition follows.

The waste streams will consist of nonconditional industrial waste, conditional industrial waste, and hazardous waste. The nonconditional industrial waste includes used materials such as paper, packaging, juice bottles, lunch refuse, and other items normally associated with administrative activities. The nonconditional industrial waste materials will never come in contact with site contaminants and will be disposed of at the Central Facilities Area landfill. The conditional industrial waste will consist of site fencing material (fence posts, wire fence, gates, etc.), the concrete pad and soil, which will be removed from the site. If the conditional industrial waste cannot be decontaminated or it is suspected or shown analytically to be RCRA hazardous waste, the waste will be disposed of off-INEEL at the permitted TSDF. If it cannot be recycled, it will be disposed of at the CFA landfill. The hazardous waste consists of potentially contaminated personal protective equipment and materials, and the RCRA hazardous lead-contaminated soil being excavated for off-INEEL disposal. The potentially contaminated personal protective equipment includes gloves, booties, tyveks, used sampling materials, and other disposable items that were in contact with site soils. These wastes will be containerized and disposed of off-INEEL at the contaminated soil TSDF. The TSDF Chem Waste Arlington or its equivalent will be identified during procurement. If a determination for compliance with the Offsite Rule has not already been obtained from the EPA for the chosen TSDF, it will be obtained at that time.

6. REFERENCES

16 USC 4691.2, "National Historical Preservation Act"

25 USC 3002, "Native American Graves Protection and Repatriation Act"

25 USC 3005, "Native American Graves Protection and Repatriation Act, Repatriation"

36 CFR 800, "National Historical Preservation Act"

40 CFR 61.92, "Radionuclide Emissions from DOE Facilities"

40 CFR 61.93, "Emission Monitoring"

40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"

40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan*

42 USC 6901, "Comprehensive Environmental Response, Compensation, and Liability Act of 1986," (CERCLA/Superfund)

49 CFR Parts 171 through 179

DOE Order 232.1, "Environmental Safety and Health Reporting"

DOE Order 232.1A, "Occurrence Reporting"

DOE Order 414.1A, "Quality Assurance"

DOE Order 440.1A, "Worker Protection"

DOE Order 470.1, "Safeguards and Security"

DOE Order 5480.4A, "Environmental Protection, Safety and Health Program for DOE Operations"

DOE, 1993, *INEL Storm Water Pollution Prevention Plan (SWPPP) for Construction Activities—Generic Activities*, DOE-10425, September 1.

DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, U.S. Department of Energy, Idaho Field Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare.

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DOE-ID, 1994b, *Track 2 Sites: Guidance for Assessing Low Probability Hazard Sites at the INEL,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10389, Revision 6, January.

DOE-ID, 1996, *INEL Comprehensive Facility and Land Use Plan,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10389, Revision 6, January.

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DOE-ID, 2000b, *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10587, Revision 6, September.

DOE-ID, 2000c, *Comprehensive Remedial Investigation/Feasibility Study for Central Facilities Area Operable Unit 4-13 at INEEL,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10680, July.

DOE-ID, 2001, *Field Sampling Plan for the Idaho National Engineering and Environmental Laboratory, Central Facilities Area, Operable Unit 4-13, Transformer Yard (CFA-10),* U.S. Department of Energy Idaho Operations Office, DOE/ID-10857, Revision 0, March.

IDAPA 58.01.01.585 and .586, "Toxic Air Emissions"

IDAPA 58.01.01.650 and .651, "Fugitive Dust"

IDAPA 58.01.05.005 (40 CFR 261.20-24), "Hazardous Waste Characteristics Identification"

IDAPA 58.01.05.006 (40 CFR 262.11), "Hazardous Waste Determination"

IDAPA 58.01.05.008 (40 CFR 264.553), "Temporary Units"

IDAPA 58.01.05.008 (40 CFR 264.554), "Remediation Waste Staging Piles"

IDAPA 58.01.05.011 (40 CFR 268), "Land Disposal Restrictions"

IDAPA 58.01.05.011 (40 CFR 268.49), "Alternative LDR Treatment Standards for Contaminated Soils"

INEEL Environmental Manual, TPR-51, "Decontamination of Heavy Equipment in the Field," and TPR-52, "Decontamination of Sampling Equipment in the Field"

INEEL, 2000a, *Health and Safety Plan Idaho National Engineering and Environmental Laboratory Central Facilities Area, Operable Unit 4-13 Transformer Yard (CFA-10),* INEEL/EXT-2000-01421, Revision 0, November.

INEEL, 2000b, *INEEL Emergency Plan/RCRA Contingency Plan,* Idaho National Engineering and Environmental Laboratory, Manual #16A, August.

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